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CLAIMS

[Claim(s)]

[Claim 1]

An antimicrobial agent which consists of silver and an organic acid anion content aluminum sulfate-water oxide particle which are expressed with a following formula (1).

$(Ag_a B_{b-a})_b Al_c A_x (SO_4)_y (OH)_z$ and pH₂O (1)

0.00001<=a<0.5, 0.7<=b<=1.35, 2.7< c<3.3, 0.001<=x<=0.5, 1.7< y<2.5, 4< z<7, 0<=p<=5, and B a, b, c, x, y, z, and p among a formula (1) Na⁺, Expressing at least one sort of univalent cations chosen from a group of NH₄⁺, K⁺, and H₃O⁺, the range of total value (1b+3c) of the number of valence x mols of a positive ion is 8<(1b+3c)<12, and A expresses an organic acid anion.

[Claim 2]

The antimicrobial agent according to claim 1, wherein the organic acid anion A according to claim 1 is at least one sort chosen from an anion group based on organic carboxylic acid or organic hydroxy acid.

[Claim 3]

The antimicrobial agent according to claim 1 being at least one sort as which the organic acid anion A according to claim 1 is chosen from an anion group based on organic carboxylic acid or organic hydroxy acid which has the carbon numbers 1-15.

[Claim 4]

The antimicrobial agent according to claim 1 which are at least one sort of univalent cations as which the inside B of formula (1) was chosen out of a group of Na⁺, H₃O⁺, and NH₄⁺.

[Claim 5]

The antimicrobial agent according to claim 1 which consists of having calculated c mol of aluminum in aluminum_c in formula (1) with the number of sum total mols of Zn²⁺ and/or Ti⁴⁺, and having replaced

1/2 or less [of an aluminum c mol] by Zn²⁺ and/or Ti⁴⁺.

[Claim 6]

Among a formula (1) (SO₄), a part of SO₄²⁻ of y . The antimicrobial agent according to claim 1 replaced with at least one sort of other inorganic acid ion chosen from a group of PO₄³⁻, CO₃²⁻, NO₃⁻, SiO₄⁴⁻, and BO₃³⁻.

[Claim 7]

As for this particle, the following (i) reaches (the antimicrobial agent possessing particle property of ii according to claim 1.).

(i) The second [an average of] particle diameter measured by a laser-diffraction-and-scattering method is 0.1 micrometer - 12 micrometers,

(ii) BET method specific surface area is 0.1-250m²/g.

[Claim 8]

These particles are (iii)Dr=D₇₅/D₂₅ (D₂₅ particle diameter of the 25% value of a volume reference accumulation particle-size-distribution curve by a laser-diffraction-and-scattering method). [express and] D₇₅ -- particle diameter of the 75% value -- expressing -- the antimicrobial agent according to claim 1 a range of whose degree of sharpness of particle size distribution defined is 1.0 <=Dr<=1.8.

[Claim 9]

The antimicrobial agent according to claim 1 whose particle shape with which these particles were observed with a SEM photograph is a globular shape, discoid (the shape of a go stone), the shape of a couple (the shape of a hamburger), rice grain shape, rectangular parallelepiped shape, the hexagon-head tabular, cylindrical shape (the shape of a sake barrel), or the shape of octahedron.

[Claim 10]

The antimicrobial agent according to claim 1 whose second [an average of] particle diameter by which this particle was measured by a laser-diffraction-and-scattering method is 0.1-5 micrometers.

[Claim 11]

The antimicrobial agent according to claim 1 whose BET method specific surface area of these particles is 1-100m²/g.

[Claim 12]

a, b, c, x, y, z, and p satisfy 0.001<=a<0.3, 0.9<=b<=1.2, 2.7< c<3.3, 0.001<=x<=0.2, 1.7< y<2.3, 5< z<7, and 0<=p<3 among a formula (1), The antimicrobial agent according to claim 1 with which B expresses at least one sort of univalent cations chosen from a group of Na⁺, NH₄⁺, and H₃O⁺, and the range of the number of valence x mols of a positive ion (1b+3c) is satisfied of 9<(1b+3c)<11.

[Claim 13]

The antimicrobial agent showing an organic acid anion which is at least one sort as which the inside A of formula (1) is chosen out of a group of oxalic acid ion, a citrate ion, malic acid ion, a tartrate ion, glyceric acid ion, gallic acid ion, and lactic acid ion according to claim 1.

[Claim 14]

The antimicrobial agent according to claim 1 in which the surface treatment of the surface of the antimicrobial agent according to claim 1 was carried out by at least one sort chosen from groups, such as a higher fatty acid group, the Silang system coupling agent, a titanate system coupling agent, an aluminate system coupling agent, alcoholic phosphoric ester, and surface-active agents.

[Claim 15]

A manufacturing method of the silver according to claim 1 and an organic acid anion content aluminum sulfate-water oxide particle antimicrobial agent carrying out contact stirring of the solution characterized by comprising the following, and carrying out ionic exchange of some positive ions of this particle to silver.

Aluminum sulfate.

An alkaline aqueous solution which turns into a mixed water solution with univalent cation sulfate and/or a nitrate from a univalent positive ion.

And particles and silver which were obtained after generating an organic acid anion content aluminum sulfate-water oxide particle by adding and carrying out the pyrogenetic reaction of the organic acid.

[Claim 16]

A resin composition which 0.001-300 weight-section combination of the antimicrobial agent according to claim 1 is carried out to resin 100 weight section, and has antibacterial properties.

[Claim 17]

An antibacterial resin composition having carried out the amount part combination of 0.001- duplexes of the antimicrobial agent given in claim 1 written to resin 100 weight section, and excelling in transparency.

[Claim 18]

An antibacterial resin-molding article formed from the resin composition according to claim 16.

[Claim 19]

An antibacterial film formed from the resin composition according to claim 16.

[Claim 20]

An antimicrobial fiber formed from the resin composition according to claim 16.

[Claim 21]

An antimicrobial nonwoven fabric formed from the resin composition according to claim 16.

[Claim 22]

An antimicrobial coating material formed from the resin composition according to claim 16.

[Claim 23]

An antibacterial caulking material formed from the resin composition according to claim 16.

[Claim 24]

The antibacterial resin product according to any one of claims 16 to 23 in which 0.000001-0.1 weight-section addition of the fluorescent brightener was carried out to resin 100 weight section, and a whiteness degree has been improved.

[Claim 25]

An antifungal agent containing the antimicrobial agent according to claim 1.

[Claim 26]

Cosmetics containing the antimicrobial agent according to claim 1.

[Claim 27]

Antibacterial paper containing the antimicrobial agent according to claim 1.

[Claim 28]

An antibacterial deodorant spray containing the antimicrobial agent according to claim 1.

[Claim 29]

Agricultural chemicals containing the antimicrobial agent according to claim 1.

[Translation done.]